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APPLICANT : SUMITOMO METAL IND LTD;

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TITLE : FREE-CUTTING STEEL

ABSTRACT : PROBLEM TO BE SOLVED: To provide an inexpensive nonleaded free-cutting steel having machinability equal to that of a free-cutting leaded resulfurized steel.

SOLUTION: This free-cutting steel has a composition which consists of, by weight, 0.05-0.30% C,  $\leq 0.10\%$  Si, 0.85-2.00% Mn, 0.020-0.20% P,  $> 0.50$ -0.80% S, 0.0030-0.0200% N, 0.0050-0.0350% O(oxygen),  $\leq 0.30\%$  Cu,  $\leq 0.30\%$  Ni,  $\leq 1.5\%$  Cr,  $\leq 0.2\%$  Mo,  $\leq 0.10\%$  Al,  $\leq 0.50\%$  Bi,  $\leq 0.10\%$  Te,  $\leq 0.05\%$  Ca,  $\leq 1.00\%$  Ti,  $\leq 0.50\%$  V,  $\leq 0.0050\%$  B, and the balance Fe with inevitable impurities and in which the value of Mn(%) / S(%) is regulated to  $\geq 1.70$ .

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